

anchoring the liner to the canal, at least one of the tabs being spaced from the sides of the liner before the installation of a fastener.

Remarks

The Official Office Action of August 22, 2002, and the references therein cited have been carefully considered.

Applicant has obviously failed to claim this invention in a manner that stands out when compared to the references applied by the Examiner. The Japanese patents relied upon by the Examiner disclose techniques for joining the ends of membrane sections together so a liner can be installed to cover the length of a canal. Applicant's invention does not relate to joining the ends of membrane sections together. Applicant's invention relates to supporting intermediate sections of the liner to the canal so the liner can be installed in the canal with some assurance that it will stay there and not leak. What applicant has been trying to claim is joining a tab on the back of the liner to the canal with fasteners that do not puncture the membrane.

Previously submitted claims 1-13 and 15-23 were rejected as unpatentable under 35 USC 103 over Japanese 57-29718 in view of Japanese 4-7499 based on a rationale very similar to that in the first Office Action, i.e. it would be obvious to use the technique

of '799 in the canal liner of '718. Applicant controverts this rejection as it may relate to the claims now presented.

Japanese patents '499, '610 and '718 relate to the joining of waterproof sheets at the ends thereof rather than joining an intermediate portion of a sheet to its underlying support. For example, Figure 2 of '718 shows sheets of impermeable sheet being joined by driving a fastener through the overlapped sheets. Figure 3 of '718 evidently shows the sheets being sewn together.

The problem of attaching waterproof sheets together is not the problem addressed by this invention. Indeed, this invention has the same problem as the prior art in providing a leak proof joint between adjacent impermeable sheets.

The problem addressed by this invention is securing intermediate sections of an impermeable sheet to open top gravity flow liquid transport canals. The goal is to provide a mechanical connection without driving a fastener through the impermeable sheet which inherently produces a potential leakage site. The Examiner will appreciate that driving a fastener every few feet along multiple lines of tabs extending along the length of a liner several thousand feet long would produce several thousands of potential leakage sites, many of which would ultimately leak despite everything that could be done.

Independent claims 1, 17, 20, 26 and 28 recite this concept in a variety of manners, all of which recite in some fashion that the tabs and fasteners are located between the joints of adjacent sections. None of the references of record show such a construction.

For example, claim 1 recites:

An open top gravity flow liquid transport canal having a length providing a direction of flow and a width and having therein a plastic liner comprising a series of sections secured together at joints extending transverse to the length of the canal, the joints incorporating fasteners extending into the canal, each of the sections including a continuous impermeable unpunctured membrane extending along the length of the canal for minimizing leakage from the canal and at least one tab between the liner and the canal at a location between the joints and a series of fasteners extending through the tab having a head between the tab and the liner. (Emphasis added.)

The Japanese patents relied upon by the Examiner have all of their fasteners along the joints between adjacent membrane sections. In the event the Examiner continues a rejection based on Japanese patents 4-7499 and 57-29718, it is respectfully requested that the

Examiner explain why it would be obvious to provide a tab on the back of the membrane in a location where there is no joint.


The Examiner is not giving sufficient weight to limitations in the claims. For example, claims 27 and 28 recite that the tabs extend in the direction of flow. In the event the Examiner continues a rejection of claims 27 and 28 on the Japanese patents of record, it is requested the Examiner explain how the joint between the adjacent sheets, which runs perpendicular to the length of the canal, requires tabs that run in the direction of flow.

It is accordingly submitted that independent claims 1, 17, 20, 26 and 28 and their dependent claims are allowable over the art of record.

A set of marked up claims is attached.

It is accordingly submitted that this application is in condition for allowance and early steps toward that end are earnestly solicited.

Respectfully submitted,



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1. (Twice Amended) An open top gravity flow liquid transport canal having a length providing a direction of flow and a width and having therein a [an impermeable] plastic liner [providing] comprising a series of sections secured together at joints extending transverse to the length of the canal, the joints incorporating fasteners extending into the canal, each of the sections including a continuous impermeable unpunctured membrane extending along the [a] length of the canal for minimizing leakage from the canal and at least one tab between the liner and the canal at a location between the joints and a series of fasteners extending through the tab having a head between the tab and the liner [,the liner being continuous at location spaced from and 360° around at least some of the fasteners immediately before driving the fasteners through the tab and the liner being unpunctured immediately after driving the fasteners].

14. (Amended) The canal of claim 13 wherein the anchor [anchoring means] includes a series of anchors extending into the earth in a path along a length of the canal, a member connected between adjacent anchors and fasteners extending through the tab and into the member at spaced intervals along the length of the canal.

17. (Twice Amended) An open top gravity flow liquid transport canal having a wall; an impermeable, imperforate plastic liner having a first side juxtaposed to the wall and a second side exposed to liquid in the canal, the plastic liner including a series of sections secured together along joints extending across a width of the canal; and a series of fasteners on the first side of the liner connecting the liner to the canal wall, at least a substantial number of the fasteners being between the joints in an area where the liner is continuous before a fastener is installed.

20. (Twice Amended) The method of lining an open top gravity flow liquid transport canal having a length providing a direction of flow, comprising

providing a first plastic liner section having ends spaced along the length of the canal and sides providing a width wider than the canal and at least one tab on a first side of the liner intermediate the sides and ends of the liner; then

placing the liner in the canal so the first and second ends are spaced apart along the length of the canal and then placing the tab adjacent the canal;

then anchoring the liner to the canal including driving a series of fasteners through the tab at locations spaced along the length of the canal between the ends of the sections; and then

placing the sides of the first liner section over a top of the sides of the canal, and then

providing a second liner section having sides providing a width wider than the canal and an end and joining ends of the first and second liner sections together.

26. (Amended) An open top gravity flow liquid transport canal having a length providing a direction of flow and having therein a [an impermeable] plastic liner including a series of impermeable membrane sections having ends secured together by joints extending across the length of the canal, the joints incorporating fasteners extending into the canal, each of the sections including [and] at least three spaced apart tabs between the section ends and between the liner and the canal and a series of fasteners extending through the tabs having a head between the tab and the liner for anchoring the liner to the canal [, at least part of one of the tabs being in an area where the liner is continuous before a fastener is inserted through the tab].

27. (Amended) The open top gravity flow liquid transport canal of claim 26 wherein [the canal has a length providing a direction of flow in the canal and] the tabs extend along the length of the canal [, the liner having ends spaced along the length of the canal

and sides transverse to the length, the tab where the liner is continuous before a fastener is inserted through the tab being adjacent the center of the liner].

28. (Amended) An open top gravity flow liquid transport canal having a length providing a direction of flow and having therein a [an impermeable] plastic liner comprising membrane sections providing first and second ends spaced apart along the length of the canal and secured together along joints transverse of the length and first and second sides transverse to the first and second ends and at least three tabs between the liner and the canal extending in the direction of flow, and several series of fasteners extending from adjacent the first liner end to adjacent the second liner end and projecting through the tab having a head between the tab and the liner for anchoring the liner to the canal, at least one of the tabs being spaced from the sides of the liner before the installation of a fastener.